



Government of Kerala

# **REPORT ON COST OF CULTIVATION OF IMPORTANT CROPS IN KERALA 2000-01**

**DEPARTMENT OF ECONOMICS & STATISTICS  
THIRUVANANTHAPURAM  
2003**

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# REPORT ON COST OF CULTIVATION OF IMPORTANT CROPS IN KERALA 2000-01

## CHAPTER – I

### GENERAL

#### ***1.1 Introduction***

Agriculture being the primary occupation of the community, maximization of output and profit in farming is essential to meet the increased food requirement of the growing population. High yield from the cultivation depends largely on the vagaries of nature and Agro-Climatic conditions. The gain or loss of cultivation of a crop is also determined on the basis of the cost of various inputs used and the value of the main product and the by-products received from it. In order to chalk out various schemes in Agricultural Sector and for fixing the floor and support prices, proper assessment of the cost of cultivation and value of product is necessary. With this end in view, Government of Kerala in G.O.(Rt) 466/79/Plg. Dated: 27.10.1979 sanctioned a scheme for an annual survey on Cost of Cultivation of important crops in Kerala. The present report relates to the 21<sup>st</sup> round of survey conducted during 2000-2001.

The crops covered during the period under study are given below:-

1. Paddy (3 seasons)
2. Coconut
3. Banana
4. Tapioca
5. Pepper
6. Ginger
7. Turmeric.

#### ***1.2 Objectives***

This survey is mainly intended for estimating the cost of cultivation per hectare of important crops and for comparing the costs under different concepts, over a period.

#### ***1.3 Staff***

(a) Head Quarters Staff

1. Research Assistant - 1 No.
2. U.D.Compiler - 1 No.

(b) Field Staff

1. U.D.Investigator - 14 Nos.
  2. L.D.Investigator (HG) - 14 Nos
- ( 4 Posts were shifted to the Directorate for the consolidation of the report)

#### ***1.4 Period of the Survey***

The period of the survey was from 1.7.2000 to 30.6.2001

#### ***1.5 Design of the survey:-***

The survey covered all the districts of Kerala by selecting 38 Taluks, which are important growing centres of the different selected crops. From each selected taluk two investigator zones were selected using simple random sampling method.

#### ***Selection of cultivators***

In each selected Investigator zone a list of cultivators growing paddy in the previous autumn season will be prepared from the last years Form I Diary of the EARAS. From this list of paddy growing cultivators last Autumn seasons five cultivators will be selected at random for the current years cost of cultivation study on autumn paddy. Similar procedure is adopted for the selections of

cultivators for winter and summer paddy respectively by preparing a list of paddy growing plots in winter and summer of the previous EARAS round in the zone.

In the case of cultivators selected for cost of cultivation study on Autumn paddy possess suitable number of plots with other crops they may be selected for the cost of cultivation study on other crops like coconut, Tapioca, Banana, etc

If sufficient number of suitable plots are not available with the cultivators selected for autumn paddy the required number of plots for crops other than paddy will be selected from the list of wet and dry land plots of the same Investigator zone in last year. If the selected investigator zone in the taluk does not provide the required number of plots for these crops another Investigator zone in the taluk will be selected at random for selection of the remaining required number of plots/cultivators for the study on other crops.

The number of holdings selected for each crops in a taluk is as follows:-

1	Paddy	Autumn	10	(5 holdings each from one Investigator zone)
		Winter	10	(5 holdings each from one Investigator zone)
		Summer	10	(5 holdings each from one Investigator zone)
2	Coconut		10	(5 holdings each from one Investigator zone)
3	Tapioca		5	(Minimum 2 holdings in one Investigator zone)
4	Banana		5	(Minimum 2 holdings in one Investigator zone)
5	Pepper		5	(Minimum 2 holdings in one Investigator zone)
6	Ginger		5	(Minimum 2 holdings in one Investigator zone)
7	Turmeric		5	(Minimum 2 holdings in one Investigator zone)

A holding was considered for the study only if it contained at least 25 cents under the crops in the case of Paddy and 10 cents in the case of Tapioca, Banana, Ginger and Turmeric, perennial crops like coconut and pepper the holdings should have 25 trees/plant with at least 50% bearing.

The holding size group of a crop was determined on the basis of the area under the crops under study in the holding as shown below:

Size	Group	Holding size	
		Paddy	Other crops
1	Small	< 0.40 hectare	< 0.2 hectare
2	Medium	0.40 to < 2 hectare	0.20 to < 0.80 hectare
3	Large	≥ - 2 hectare	≥ -0.80 hectare

Note:- < - Less than ≥ - Greater than or equal to

### 1.6 Schedules

Three schedules were designed for the survey

Schedule 1	This schedule is used for listing the plots for selection of holdings and recording the details of the selected holdings
Schedule 2	This schedule is needed for recording details of the cultivator's household, area of holdings, inventory of agricultural implements, livestock etc.
Schedule 3	In this schedule the cultivation expenses incurred for a crop in each fortnight is reported.

### 1.7 Field work:-

Field work was done by 38 investigators in 38 selected taluks, one investigator in each taluk. The investigators visited the selected holdings every fortnight and recorded fortnightly operations in Schedule III. The field work was supervised by Taluk Statistical Officer at the taluk level and Deputy Director / District Officer at the District level.

## **I.8 Processing and Analysis of Data:-**

The compilation and tabulation were done at the district level. The state level consolidation of the data is done at the Directorate and the report writing and analysis are done at the Directorate.

## **I.9 Method of estimation of cost**

### **(a) Concept of cost**

Different cost concepts, cost 'A' cost 'B1' and cost 'B' and cost 'C' have been followed in the analysis as shown below:-

#### **Cost 'A'**

Cost 'A' consists of cash and kind expenses (paid out costs) actually incurred by the cultivators. This includes -

- i. Hired human labour
- ii. Animal labour
- iii. Machine labour
- iv. Seed (seed lings)
- v. Farm yard manure and Chemical fertilizers
- vi. Plant protection
- vii. Land tax
- viii. Irrigation cess
- ix. Repair and maintenance charges of implements, machinery and buildings
- x. Interest on working capital
- xi. Other expenses

**Cost 'B1':** Cost 'A' + Interest on fixed assets ( excluding land)

**Cost 'B':** Cost 'B1' + interest on land value

**Cost 'C':** Cost 'B' + Imputed value of family labour

### **(b) Procedure for imputation of values of owned inputs.**

In the production process certain inputs from home stock are used. In order to estimate the cost of cultivation it is necessary to impute the value of these inputs. The procedure used for the imputation of value of such home stock inputs is indicated below:-

i	Family labour	Imputed on the basis of average wage rate per work hour of hired labour.
ii	Owned and exchange human labour	The rate of wages per hour for hired human labour is taken for imputing the value of own stock and exchange human labour
iii	Owned and exchanges animal labour	The charges paid per hour for hired animal labour is taken for imputing the value of owned and exchanges animal labour.
iv	Owned and exchange machine labour	The hire charges per hour for machine labour has been taken
v	Implements	Repair and maintenance charges of implements
vi	Owned seed	Farm produced (home grown) seed has been imputed at the prices prevalent in the investigator zone concerned at the time of sowing
vii	Farm produced manure	Imputed at the rate prevalent in the zone concerned.
viii	Interest on fixed capital	Interest on the present value of fixed assets such as land, farm, building, implements, machinery, irrigation, structure, equipments and livestock (only draught animals) at the rate of 10 % per annum has been calculated. (In the case of paddy 5% per annum is taken)

- |    |                             |  |
|----|-----------------------------|--|
| ix | Interest on working capital | Interest has been charged at the rate of 10% per annum on the working capital, cash and kind expenses excluding items in respect of which payments are generally made after harvest (ie. rent, land tax , etc) incurred during the period of cultivation |
| x  | Payments of kind            | The payments in kind have been evaluated at the market prices prevalent in the locality at the time of payment. Perquisites have been included in the payments in kind calculated at the market prices.  |

**(C) Allocation of joint costs to different crops**

Some of the inputs used for the cultivation of one crop are common for many other crops also. For the purpose of computing the cost share of individual crops, the cost of such inputs is apportioned in the following manner.

- |     |  |  |
|-----|--|--|
| I   | Repair and maintenance charges of implements   | In proportion to the area under the crop     |
| ii  | Interest on own fixed capital (excluding land) | In proportion to the area under the crop     |
| iii | Interest on land value                         | Interest on the value of land under the crop |

**(D) Procedure for valuation of farm assets**

- |     |   |   |
|-----|---|---|
| i   | Own farm buildings (cattle sheds, storage shed etc) | Valuated at prices prevailing in the locality |
| ii  | Implement and other machinery                       | Valuated at prevalent market prices           |
| iii | Livestock (only draught animals)                    | Valuated at prevalent market prices           |

In calculating the cost of production of paddy crop in each season the interest on land value at the rate of 10% per annum for the period of 6 months is taken in to account. The land value is estimated at the current market rate in the different areas. There is a controversy in the assessment of land value. The land value is increasing considerably. If the actual value is taken for calculating the interest in land value, no cultivation is profitable in the state. However, there is always tendency to under report the land value. It is therefore necessary to evolve a method or criteria to estimate the land value reasonably while calculating the cost of cultivation of crop.

## Chapter – 2

## RESULTS OF THE SURVEY

## (i) Autumn Paddy

The total number of holdings selected for the cost of cultivation study on autumn paddy were 360. They were scattered in all 38 selected taluks of the State. The number of holdings selected and the area under the crop in each holding size class viz. small, mediums and large are given below:

Table 1 - Area under autumn paddy during 2000-01

Holding size class	No of selected holdings	Area under the crop in the sample (ha)	Percentage	Are per holding (ha)
Small	221	47.41	22.97	0.21
Medium	118	78.33	37.96	0.66
Large	21	80.62	39.07	3.83
Total	360	206.36	100.00	0.57

The holdings under report had a total operational area of 206.36 hectare and the average size of holding was 0.57 hectare.

## A. Cost of cultivation

The per hectare cost of autumn paddy cultivation is furnished below:

Table 2- Cost of cultivation per hectare of paddy (autumn) during 2000-01

Sl No	Component of different cost concept	Cost per hectare (in Rs)	% Distribution of cost
1	Hired human labour	10571	61.42
2	Animal labour	444	2.58
3	Machine labour	1387	8.06
4	Seed / seedlings	1062	6.17
5	Farmyard manure and chemical fertilizers	2168	12.60
6	Plant protection	173	1.01
7	Land tax and irrigation cess	173	1.00
8	Repair and maintenance charges of implements, machinery and building	199	1.16
9	Interest on working capital	802	4.66
10	Other expenses	231	1.34
11	Total cost 'A' (1-10)	17210	100.00
12	Interest on fixed capital	894	
13	Cost 'B1' (11+12)	18104	
14	Interest on land value	18464	
15	Cost 'B' (13+14)	36568	
16	Imputed value of household labour	1059	
17	Cost 'C' (15+16)	37627	

A comparison with the previous years cost of cultivation of Autumn paddy reveals that when cost 'A' is considered 6% increase is recorded. Details are presented below:

**Table 3 - Cost of cultivation of (Autumn) paddy in Rs/ for 1999-2000 & 2000-01**

Concept of cost	Year	Holding size class			
		Small	Medium	Large	All Sizes
Cost 'A'	1999-2000	19079	16316	14898	16218
	2000-2001	20494	17140	16063	17210
Cost 'B'	1999-2000	41041	35816	30301	35112
	2000-2001	50347	34870	30593	36568
Cost 'C'	1999-2000	42983	36816	30638	36108
	2000-2001	52774	35947	30829	37627

**B. Output**

The value of the product and by-product of Autumn Paddy Cultivation for the year 2000-01 is given in the following table

**Table 4 - Value of product and by product per hectare (in Rs) during 2000-01**

Product/By-product	Holding size class			
	Small	Medium	Large	All Sizes
Paddy	16987	15349	17529	16577
Straw	4567	3287	1016	2694
Total	21554	18636	18545	19271

During the year under report the per hectare value of output is estimated at Rs 19271/-, which showed decrease of 4% compared to the previous year.

**C. Cost of Production of Paddy per quintal**

Estimated cost of producing one quintal of paddy according to size class is given below:

**Table 5 - Cost of production of paddy per quintal in Autumn season 2000-01****(in Rs.)**

Concept of Cost	Hoding size class			
	Small	Medium	Large	All Sizes
Cost 'A'	637	602	602	605
Cost 'B'	1831	1373	1183	1411
Cost 'C'	1928	1420	1192	1456

When Cost 'A' is considered the cost of production of paddy per quintal was Rs.605/- during the period under report. It showed an increase of 8% when compared to the previous year.

**(ii) Winter Paddy**

The study on cost of cultivation of Winter Paddy was conducted in 380 holdings. The sample area and other details of the selected holdings are given below.

**Table 6 – Area under Winter Paddy during 2000-01**

Holding size class	No: of selected holdings	Area under the crop in the sample (ha)	Percentage	Area per holding (ha)
Small	207	56.17	20.07	0.27
Medium	140	117.06	41.82	0.84
Large	33	106.68	38.11	3.23
Total	380	279.91	100.00	0.73



### A. Cost of cultivation

The cost of different items per hectare of Cost 'A' (percentage distribution) is given below:

**Table 7 – Cost of cultivation per hectare of paddy (Winter) during the year 2000-01**

Sl. no	Component of different cost concept	Cost per hectare (in Rs)	Percentage distribution of Cost 'A'
1.	Hired human labour	8615	52.79
2.	Animal labour	610	3.74
3.	Machine labour	1677	10.28
4.	Seed/Seedlings	997	6.11
5.	Farmyard manure and Chemical fertilizers	2418	14.82
6.	Plant Protection	317	1.94
7.	Land tax and Irrigation cess	89	0.54
8.	Repair and maintenance charges of implements, machinery and buildings	228	1.40
9.	Interest on working capital	762	4.67
10	Other expenses	605	3.71
11	Cost A (1-10)	16318	100.00
12	Interest on fixed capital	884	
13	Cost 'B1' (11+12)	17202	
14	Interest on land value	13952	
15	Cost 'B' (13+14)	31154	
16	Imputed value of household labour	1019	
17	Cost C (15+16)	32173	

Above table shows that the per hectare cost towards hired human labour in Winter Paddy cultivation constitutes to 53% of 'A'.

Cost 'A' consists of paid out costs and it is worked out to Rs.16318/- during 2000-01. Application of farmyard manure and chemical fertilizers which constitutes 15% of the Cost 'A' ranks 2<sup>nd</sup> in the different labour input items.

### Cost 'B1' and Cost B

Cost B1 is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It is seen as Rs 17202/-.

Per hectare interest on land value is rs.13952/-

### Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to Cost 'B'. It is estimated to be Rs 32173/-.

**Table 8 – Percentage of hired human labour hours to total human labour hours**

Sex	Holding size class			
	Small	Medium	Large	All Sizes
Male	23.66	21.34	17.04	20.36
Female	60.66	69.57	75.49	69.59
Total	84.32	90.91	92.53	89.95

In winter paddy cultivation the proportion of hired human labour to total human labour input steadily increases with the increase in size of holdings.

### B. Output

The estimates of value of paddy and straw obtained from winter paddy cultivation is given below.

**Table 9 - Value of output (Rs/hect)**

Product & By product	Holding Size Class			
	Small	Medium	Large	All Sizes
Paddy	15325	15043	21780	17668
Straw	5206	3764	2653	3630
Total	20531	18807	24433	21298

**C. Cost of production of Paddy Per Quintal**

Cost of production of paddy per quintal during the winter season is given below:

**Table 10 – Cost of production of Winter Paddy per quintal during 2000-01 (Rs/ha)**

Concept of cost	Holding Size Class			
	Small	Medium	Large	All Sizes
Cost 'A'	544	477	412	453
Cost 'B'	1205	1263	713	983
Cost 'C'	1286	1302	733	1019

From the above table it is seen that when cost 'A' is considered cost of producing one quintal of paddy is Rs.453/-. It is also reveals that when size class increases the cost of production seems to be decreased.

**III Summer Paddy (Punja)**

During 2000-01, 298 holdings were selected for the cost of cultivation of summer paddy. Details of these holdings are given below.

**Table 11 - Area under Summer Paddy during 2000-01**

Holding Size Class	No:of selected holdings	Area under the crop in the sample (ha)	Percentage	Area per holding (ha)
Small	159	35.30	16.18	0.22
Medium	105	75.58	34.63	0.72
Large	34	107.36	49.19	3.16
Total	298	218.23	100.00	0.73

**A. Cost of cultivation**

The cost of cultivation per hectare of summer paddy is given in the following table.

**Table 12 - Cost of Cultivation per hectare of Summer Paddy for the year 2000-01**

Sl. no	Components of different Cost concept	Cost per ha (Rs)	% Distribution of Cost 'A'
1.	Hired human labour	10686	52.72
2.	Animal labour	543	2.68
3.	Machine labour	1921	9.48
4.	Seed/Seedlings	1101	5.43
5.	Farmyard manure & Chemical fertilizers	2720	13.42
6.	Plant protection	676	3.34
7.	Land tax and Irrigation cess	236	1.16
8.	Repair and maintenance charges	268	1.32
9.	Interest on working capital	941	4.64
10	Other expenses	1178	5.81
11	Total Cost 'A' (1-10)	20270	100.00
12	Interest on fixed capital	756	
13	Cost 'B1' (11+12)	21026	
14	Interest on land value	9374	
15	Cost 'B'(13+14)	30400	
16	Imputed value of household labour	1174	

17	Cost 'C' (15+16)	31574	
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In summer paddy cultivation of hired labour cost component shares the largest percentage among other cost component (53%), Second place attains to farmyard manure and chemical fertilizers (13%). Machine labour cost which accounts to 9% ranks the 3<sup>rd</sup> position. Size class wise distribution of various cost component reveals that hired labour cost and animal labour cost decreases as size class increases. Likewise imputed value of households labour also decreases as size class increases.

### Cost 'B1' & Cost 'B'

Cost 'B1' is estimated to be Rs 21026/- where as Cost 'B' is recorded as Rs.30400/-

### Cost 'C'

Cost 'C' is estimated by adding the imputed value of household labour to Cost 'B'. It is seen as Rs 31574/-.

The percentage of hired human labour hours to the total human labour hours is given below:

**Table 13 - Percentage of hired human labour hours engaged in Summer Paddy Cultivation**

Holding Size Class	Male	Female	Total
Small	22.83	58.88	81.71
Medium	18.84	69.46	88.30
Large	18.23	77.96	96.19
All Size	19.30	71.29	90.59

Percentage distribution of hired human labour hours engaged in Summer Paddy shows that female participation is 71% and male participation is 19%.

## B. Output

Value of Product and By-product per hectare 2000-01

**Table 14 – Value of Output (Rs/ha)**

Product / By product	Holding Size Class			
	Small	Medium	Large	All Sizes
Paddy	19257	22101	23077	22122
Straw	4874	3321	1794	2821
Total	24131	25422	24871	24943

Above table shows that the estimated value of paddy and straw obtained from summer paddy cultivation is Rs.24943/-

## C. Cost of production of paddy per quintal

Cost of producing one quintal of paddy is got by dividing the cost of cultivation per hectare (after deducting the value of by product per hectare from the cost of cultivation per hectare) by the yield per hectare.

**Table 15 - Cost of production of Summer paddy per quintal**

Concept of cost	Holding size class			
	Small	Medium	Large	All size
Cost 'A'	328	442	464	436
Cost 'B'	661	728	658	689
Cost 'C'	718	769	669	719

## 2.2 Coconut

Total area under coconut cultivation in the state during 2000-01 is 925783 hectares and the average yield per hectare is 5979 nuts. Details are given below:

**Table 16 - Area and average yield of coconut 2000-01**

Total cropped Area (ha)	Area under coconut (ha)	Average yield per hectare (No. of nuts)	Percentage of area under coconut to cropped area
3021682	925783	5979	30.64

For the survey on cost of cultivation of coconut 380 holdings were selected. The details as follows:

**Table 17 - Number of holdings and area under coconut**

Holding size class	No. of holdings	Area under coconut in the sample (ha)	Percentage	Area per holding (ha)
Small	101	15.76	7.46	0.16
Medium	191	76.92	36.40	0.40
Large	88	118.65	56.14	1.34
All size	380	211.33	100.00	0.56

The selected holdings had a total 211.33-hectare and average size of holding was 0.56 hectare.

### **Number of bearing and non-bearing trees per hectare**

**Table 18 - Number of bearing and non-bearing trees per hectare**

Type of trees	No. of trees per hectare	Percentage
Bearing	173	74.89
Non-bearing	58	25.11
Total	231	100.00

Out of the total coconut trees in the selected plots 75% are found to be bearing.

### **A. Cost of cultivation**

**Table 19 - Cost of cultivation per hectare of coconut during the year 2000-01**

Sl. No	Components of different cost concepts	Cost per hectare (Rs)	% distribution of cost 'A'
1	Hired human labour	7328	56.57
2	Animal labour	13	0.10
3	Machine labour	154	1.19
4	Seed / seedlings	26	0.20
5	Farmyard manure and chemical fertilizers	3572	27.57
6	Plant protection	23	0.18
7	Land tax and irrigation cess	69	0.53
8	Repair and maintenance charges	28	0.22
9	Other expenses	573	4.42
10	Interest on working capital	1169	9.02
11	Total cost 'A' (1-10)	12955	100.00
12	Interest on fixed capital	1601	
13	Cost 'B1' (11+12)	14556	
14	Interest on land value	150762	
15	Cost 'B' (13+14)	165318	
16	Imputed value of household labour	987	
17	Cost 'C' (15+16)	166305	

For cultivating coconut in a hectare hired human labour cost only shares to 57% of the total Cost 'A'

**Table 20 - Percentage Distribution of hired human labour hours to the total human labour hours.**

Sex	Holding size class			
	Small	Medium	Large	All sizes
Male	57.35	71.31	77.27	72.66
Female	11.63	10.16	13.10	11.75
Total	68.98	81.47	90.37	84.41

In coconut cultivation female participation is lower than the male participation. About 85% of the total human labour hours has been shared by hired human labour. Usage of animal labour is nominal. Machine labour also constitutes to below 2%.

Hired human labour cost and imputed value of household labour seems to be decreased as size class is increasing.

Farmyard manure and chemical fertilizers which shares the next position (28%) among the various inputs. Cost towards planting of new seedlings are seems to be less (i.e. only 0.20 of the Cost 'A'). Plant protection cost also shares below 1%.

### Cost 'B1' and Cost 'B'

Cost 'B1' concept is including the interest on fixed capital (excluding land) to cost 'A' it is accounted to Rs. 12955/-. Interest on land value also assessed and it is added to the Cost 'B1' for getting Cost 'B'. It is found to be Rs.165318.

### Cost 'C'

For estimating Cost 'C', imputed value of household labour also considered. As such, Cost 'C' is estimated to be Rs.166305/- during 2000-01

### B. Value of output

The total value of output / Hectare of coconut during this round is Rs.21508/-

**Table 21 - Value of output / Hectare**

Output	Value (Rs)
Product	20416
By-product	1092
Total	21508

### 2.3 Banana

The total area under banana cultivation and the average yield per hectare for the year 2000-01 are presented below:

**Table - Area and Average Yield of Banana during 2000-01**

Total cropped area (hectare)	Area under Banana (hectare)	Average Yield per Per Hectare (Tonnes)	% of area under banana to cropped area.
3021682	45059	7.28	1.49

### Selected holdings

During 2000-01 for the cost of cultivation study 180 holdings were selected. The details of these holdings in each size class is given below.

**Table 23 - Area and number of holdings selected**

Size class	Area under the crop in the sample (hector)	No of selected holdings	Percentage of selected holdings	Area per holdings
Small	12.04	130	31.10	0.09
Medium	14.58	41	37.66	0.35
Large	12.09	9	31.24	0.39
All size	38.71	180	100.00	0.22

Total area under the crop in the sample holding was 38. 71 hectare and average size of a holding seems to be 0.22 hectare.

**Cost of cultivation of Banana**

Per hectare of banana cultivation under different cost of concepts viz. Cost 'A', 'B1', 'B' and 'C' is given below:

**Table 24 - Cost of cultivation per hectare of banana during 2000-01**

Sl No.	Components of different cost concept	Cost per hectare	% distribution of cost 'A'
1	Hired human labour	26683	29.04
2.	Animal labour	37	0.04
3.	Machine labour	357	0.39
4	Seed/seedlings	7437	8.09
5.	Farm guard manure & chemical fertilizers	33458	36.43
6.	Plant protection	1248	1.37
7.	Land tax and irrigation cess	271	0.29
8.	Repaired and maintenance charges	643	0.70
9.	Interest on working capital	8350	9.09
10.	Other expenses	13369	14.56
11.	Cost 'A'	91853	100.00
12.	Interest on fixed capital	1638	
13.	Cost 'B1' (11+12)	93491	
14.	Interest on land value	55865	
15.	Cost 'B' (13+14)	149356	
16.	Imputed value of household /labour	7078	
17.	Cost 'C' (15+16)	156434	

**Table 25 - Percentage distribution of hired human labour hours to total human labour hours.**

Sex	Holding Size Class			
	Small	Medium	Large	All size
male	56.15	58.92	61.64	58.98
Female	4.56	7.96	21.32	12.87
Total	60.71	66.88	83.96	71.85

During 2000-01 the per hectare cost of cultivation of banana is found to be Rs.91853/- when Cost 'A' is considered. In this hired human labour cost only accounts to 29%. Percentage distribution of hired human labour hours to total human labour hours shows that about 72% of the total human labour hours shares to hired human labour and the remaining towards household labour hours. Sex wise distribution reveals that male participation is higher (59%) than the female participation (13%).

The major input cost of banana cultivation is towards farmyard manure and chemical fertilizers (36%)

**Cost 'B1'**

Cost 'B1' is estimated by adding the interest on fixed capital (excluding land) to cost 'A'. It is Rs.93491/- during the year 2000-01. Interest on land value is worked to Rs. 55865/-

**Cost 'B' and cost 'C'**

Cost 'B' is estimated by adding the interest on land value to cost 'B1' and cost 'C' is estimated by adding imputed value of household labour to cost 'B'. During 2000-01 Cost 'B' is Rs.149356/- and Cost 'C' is Rs.156434/-.

**B. Value of output**

The value of output per hectare during the year 2000-01 is found to be Rs.140433/-

**2.4 Tapioca**

For the cost of cultivation study of Tapioca holdings were selected during 2000-01. the details of these holdings in each size class is given in the following table;

**Table 26 – Area and number of holding selected**

Size class	Area under the crop in the sample (ha)	No. of selected holdings	Percentage of selected holdings	Area per holding
Small	10.11	103	18.12	0.09
Medium	20.85	62	37.36	0.34
Large	24.85	15	44.52	1.65
All size	55.81	180	100.00	0.31

The total area under tapioca cultivation in the state and the average yield per hectare for the year 2000-01 is given below.

**Table 27 - Area and average yield of Tapioca during 2000-01**

Total cropped area (ha)	Area under tapioca (ha)	Average yield per hectare (Tonnes)	Percentage of area under tapioca to total cropped area
3021682	114609	22.57	3.79

Area under Tapioca cultivation in the State was 114609 hectare whereas the area under the crop in the sample holdings was 55.81 hectare. The average size of a holding was 0.31 hectare.

**A. Cost of cultivation of Tapioca**

Cost estimation under different cost concepts of tapioca relating to the year 2000-01 is given below:

**Table 28 - Cost of cultivation per hectare of Tapioca during the year 2000-01**

Sl No	Component of different cost concept	Cost per hectare (in Rs)	% Distribution of cost 'A'
1	Hired human labour	15672	62.43
2	Animal labour	23	0.09
3	Machine labour	264	1.05
4	Seed / seedlings	579	2.31
5	Farmyard manure and chemical fertilizers	5166	20.58
6	Plant protection	28	0.11
7	Land tax and irrigation cess	346	1.38
8	Repair and maintenance charges	115	0.46
9	Other expenses	627	2.5
10	Interest on working capital	2282	9.09
11	Cost 'A'	25102	100.00
12	Interest on fixed capital	1709	
13	Cost 'B1' (11+12)	26811	
14	Interest on land value	101244	
15	Cost 'B' (13+14)	128055	
16	Imputed value of household labour	2075	
17	Cost 'C' (15+16)	130130	

Study on cost of cultivation of tapioca reveals that the per hectare Cost 'A' is Rs.25102/-. In this 62% accounts to hired human labour cost. The percentage of hired human labour hours engaged in tapioca cultivation to the total labour hours is given below:

**Table 29 - Percentage distribution of hired human labour hours to Total human labour hours**

Sex	Holding size class			
	Small	Medium	Large	All size
Male	60.71	50.87	82.14	62.81
Female	12.18	27.64	9.23	18.54
Total	72.89	78.51	91.37	81.35

The above table shows that the male work participation is more than the female participation in tapioca cultivation.

The second major input of tapioca cultivation is farmyard manure and chemical fertilizers (21%). Seedling cost shares to 2%. Machine labour is only 1%. Animals labour cost and plant protection are nominal i.e., below 1%.

### **Cost 'B1' and Cost 'B'**

The per hectare interest on fixed capital worked out in tapioca cultivation is Rs.1709/-. While adding this cost to Cost 'A'. Cost 'B1' is arrived. It is worked out to Rs.26811/-

Interest on land value is estimated as Rs101244 and accordingly cost 'B' is estimated as Rs.128055/- Rs.143700/-.

### **Cost 'C'**

By imputing the value of household labour to cost 'B', cost "c" concept is arrived. It is worked out to Rs.130130/- during 2000-01.

### **B. Value of out put**

The value of output of tapioca during 2000-01 is estimated as Rs.39152/- during the year 2000-01

### **2.5 Pepper**

During 2000-01 area under cultivation of pepper in the state is 202133 hectare and average yield per hectare is 301 Kg.

**Table 30- Area and average yield of Pepper**

Total cropped area (ha)	Area under Pepper (ha)	Average yield of Pepper (Kg. Per Hect.)	Percentage of area under Pepper to the total cropped area
3021682	202133	301	6.69

### **Selected holdings**

For the cost of cultivation study of Pepper during this round 185 holdings were selected. Details are presented below:

**Table 31 - Area under pepper in the sample**

Holding size class	No. of selected holdings	Total area under the crop in the sample (hectare)	Percentage of total area of selected holdings	Area per holdings (hectare)
Small	139	9.45	31.11	0.06
Medium	40	14.47	47.63	0.36
Large	6	6.46	21.26	1.07
Total	185	30.38	100.00	0.16

Above table shows that area per selected holding was 0.16 hectare



## A. Cost of cultivation of Pepper

The per hectare cost incurred under different cost components are given below:

**Table 32 - Cost of Cultivation per hectare of Pepper for the year 2000-01.**

Sl. No.	Components of different cost concept	Cost per hectare (Rs)	%distribution of cost 'A'
1.	Hired human labour	8185	58.73
2.	Animal labour	-	-
3.	Machine labour	-	-
4.	Seed/seedlings	55	0.39
5	Farmyard manure and Chemical fertilizers	3676	26.37
6	Plant protection	298	2.14
7.	Land tax and irrigation cess	64	0.46
8	Repair and maintenance charges	182	1.31
9	Interest on working capital	1267	9.09
10	Other expenses	211	1.51
11	Total cost 'A' (1-10)	13938	100.00
12	Interest on fixed capital	2125	
13	Cost 'B1' (11+12)	16063	
14	Interest on land value	169575	
15	Cost 'B' (13+14)	185638	
16	Imputed value of household labour	1662	
17	Cost 'C' (15+16)	187300	

During the year under review for Pepper cultivation the per hectare cost towards hired human labour was Rs.8185 (59% of the total Cost 'A'). The percentage of hired human labour hours engaged in the cultivation of pepper during 2000-01 is given below:

**Table 33 - Percentage of hired human labour hours engaged in pepper cultivation**

Sex	Holding size class			
	Small	Medium	Large	All size
Male	58.72	65.87	74.62	65.63
Female	6.92	9.64	24.18	12.92
Total	65.64	75.51	98.80	78.55

From the total labour hours engaged in the pepper in the pepper cultivation about 79% shares to hired human labour. The remaining is shares to house hold labour hours.

### Value of Output

The value of output is found to be 35688/- per hectare during 2000-01

## 2.6 Ginger

The number of holdings selected for cost of cultivation study on Ginger is given below:

**Table 34 -Area and number of holdings under Ginger Cultivation**

Holding size class	No of selected holdings	Area under the crop in the sample (ha)	Percentage to total area	Average per holding (ha)
Small	134	9.54	42.18	0.07
Medium	28	8.22	36.34	0.29
Large	5	4.86	21.48	0.97
All size	167	22.62	100.00	0.14

From the above table it is seen that the total number of holdings selected for ginger cultivation during the year under review was 167. It covered an area of 22.62 hectares. The average size per holding was 0.14 hectare.

## A. Cost of cultivation

The per hectare cost of cultivation details of ginger is given below. It is seen that hired human labour cost and seeling costs are the largest share among all other inputs. It constitutes to 32% each of the total Cost 'A'.

**Table 35 - Cost of Cultivation per hectare of Ginger duringr the year 2000-01.**

Sl. No.	Components of different cost concept	Cost per hectare (Rs)	%distribution of cost 'A'
1.	Hired human labour	17260	31.92
2.	Animal labour	13	0.02
3.	Machine labour	235	0.44
4.	Seed/seedlings	17538	32.43
5	Farmyard manure and Chemical fertilizers	11363	21.01
6	Plant protection	659	1.22
7.	Land tax and irrigation cess	158	0.29
8	Repair and maintenance charges	59	0.11
9	Interest on working capital	4707	8.70
10	Other expenses	2090	3.86
11	Total cost 'A'(1-10)	54082	100.00
12	Interest on fixed capital	640	
13	Cost 'B1' (11+12)	54722	
14	Interest on land value	80068	
15	Cost 'B' (13+14)	134790	
16	Imputed value of household labour	533	
17	Cost 'C' (15+16)	135323	

The percentage distribution of hired human labour hours engaged in ginger cultivation is given below:

**Table 36 - Percentage of hired human labour hours engaged in Ginger cultivation**

Holding size class	Male	Female	Total
Small	49.81	24.56	74.37
Medium	47.16	27.93	75.09
Large	68.94	25.58	94.52
All size	56.48	25.74	82.22

### Cost 'B1', Cost 'B' and Cost 'C'

Interest on fixed capital, interest on land value and imputed value of household labour, there three cost components are considered for estimating Cost 'B1', Cost 'B' and Cost 'C'. According ly it is worked as Rs.54722/-, Rs.134790/- and Rs.135323/- respectively during the year under review.

### Out put

The value of output is seen as Rs.68304/- per hectare for ginger cultivation

## 2.7 Turmeric

For studying the cost of cultivation of turmeric 130 holdings were selected. Details are given below:

**Table 37 - Number and Area under Turmeric Cultivation**

Holding size class	No of selected holdings	Area under the crop in the sample (ha)	Percentage to total Area	Area per holding (ha)
Small	116	6.74	61.55	0.06
Medium	13	3.36	30.68	0.26
Large	1	0.85	7.77	0.85
All size	130	10.95	100.00	0.08

The selected holdings had a total operational area of 10.95 hectare during 2000-01. the average size of holding was 0.08 hectare.

### Cost of Cultivation

The per hectare cost of cultivation of turmeric under different cost components is given below:

Cost 'A' consists of cash and other kind expenses which is worked out to Rs.32320/-per hectare during 2000-01. About 45% of the total Cost 'A' shares to hired labour input.

**Table 38 - Cost of Cultivation of Turmeric for the year 2000-01.**

Sl. No.	Components of different cost concept	Cost per hectare (Rs)	%distribution of cost 'A'
1.	Hired human labour	14483	44.81
2.	Animal labour	109	0.34
3.	Machine labour	405	1.25
4.	Seed/seedlings	5677	17.56
5	Farmyard manure and Chemical fertilizers	8037	24.87
6	Plant protection	57	0.18
7.	Land tax and irrigation cess	68	0.21
8	Repair and maintenance charges	79	0.24
9	Interest on working capital	2925	9.05
10	Other expenses	480	1.49
11	Total cost 'A'(1-10)	32320	100.00
12	Interest on fixed capital	737	
13	Cost 'B1' (11+12)	33057	
14	Interest on land value	82175	
15	Cost 'B' (13+14)	115232	
16	Imputed value of household labour	4563	
17	Cost 'C' (15+16)	119795	

During 2000-01 in turmeric cultivation about 82% of the total human labour hours is shared by hired human labour. Details of this distributions according to sex and size class are given below:

**Table 39 - Percentage of hired human labour hours engaged in Turmeric cultivation**

Holding size class	Male	Female	Total
Small	47.33	20.88	68.21
Medium	61.76	28.09	89.85
Large	66.54	31.25	97.79
All size	56.28	25.50	81.78

### Cost 'B1', Cost 'B' and Cost 'C'

Cost 'B1' of turmeric cultivation is found to be Rs.33057/- while considering the land value cost 'B' is estimated as rs.115232/- whereas Cost 'C' is estimated as rs.119795/-

### Value of Output

The per hectare value of output received from Turmeric Cultivation is seen as Rs.33061/- during the year under report.

### Chapter-3

## Summary of findings

The data furnished in this report are collected through the cost of cultivation survey 2000- 01. The crops covered in this report are Paddy (Autumn, Winter and Summer), Coconut, Tapioca, Banana and Pepper, Ginger and Turmeric.

**1. Autumn Paddy**

Cost benefit analysis of Autumn, Paddy cultivation shows that benefit is - 49%

**2. Winter Paddy**

In winter paddy cultivation benefit is - 34%

**3. Summer Paddy**

In summer paddy cultivation benefit is - 21%

**4. Coconut**

While considering the cost benefit of coconut cultivation it is seen that the cultivators couldn't received any positive benefit. At the same time they are in a loss of (87%) of the total cost.

**5. Pepper**

Pepper cultivators incurred a loss of – 81% to the total cost.

**6. Banana**

Banana cultivators in the state faces a loss of – 2% when considering the total cost.

**7. Tapioca**

When considering the total cost and the total benefit received from the tapioca cultivation it is seen that during 2000-01 the benefit is in a negative tune of – 70%

**8. Ginger**

Ginger cultivators in the state faces a loss of 50% of their total cost.

**9. Turmeric.**

Cost benefit figures of the turmeric cultivation shows that turmeric cultivators are facing a loss to the tune of 72% of their total cost.

**APPENDIX – 1**

**Cost of Cultivation Per hectare of Autumn Paddy during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	11745	9382	11037	10571
2	Animal labour	1138	539	64	444
3	Machine labour	1759	1667	897	1387
4	Seed/seedlings	1086	949	1157	1062
5	Farmyard manure and chemical fertilizers	3113	2355	1432	2168
6	Plant protection	239	137	170	173
7	Land tax and Irrigation cess	49	53	362	173
8	Repair & Maintenance charges	188	978	35	199
9	Interest on working capital	965	767	746	802
10	Other Expenses	212	313	163	231
11	Total cost 'A' (1-10)	20494	17140	16063	17210
12	Interest on fixed capital	918	1130	412	894
13	Cost 'B1' (11+12)	21412	18270	16475	18104
14	Interest on Land value	28935	16600	14118	18464
15	Cost 'B' (13+14)	50347	34870	30593	36568
16	Imputed value of household labour	2427	1077	236	1059
17	Cost 'C' (15+16)	52774	35947	30829	37627

**APPENDIX – 2**

**Cost of Cultivation Per hectare of Winter Paddy during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	9692	8221	8482	8615
2	Animal labour	1075	609	245	610
3	Machine labour	1594	1618	1786	1677
4	Seed/seedlings	953	965	1056	997
5	Farmyard manure and chemical fertilizers	2578	2142	2632	2418
6	Plant protection	284	268	389	317
7	Land tax and Irrigation cess	67	94	94	89
8	Repair & Maintenance charges	231	230	221	228
9	Interest on working capital	829	709	779	762
10	Other Expenses	412	355	982	605
11	Total cost 'A' (1-10)	17715	15211	16666	16318
12	Interest on fixed capital	796	947	893	884
13	Cost 'B1' (11+12)	18511	16158	17559	17202
14	Interest on Land value	14409	17909	9352	13952
15	Cost 'B' (13+14)	32920	34067	26911	31154
16	Imputed value of household labour	1868	942	657	1019
17	Cost 'C' (15+16)	34788	35009	27568	32173

**APPENDIX – 3****Cost of Cultivation Per hectare of Summer paddy during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	10851	10571	10712	10686
2	Animal labour	780	626	407	543
3	Machine labour	1868	2165	1766	1921
4	Seed/seedlings	1156	1043	1123	1101
5	Farmyard manure and chemical fertilizers	2789	2619	2762	2720
6	Plant protection	550	606	767	676
7	Land tax and Irrigation cess	123	370	178	236
8	Repair & Maintenance charges	385	372	55	268
9	Interest on working capital	927	923	958	941
10	Other Expenses	551	839	1623	1178
11	Total cost 'A' (1-10)	19980	20134	20351	20270
12	Interest on fixed capital	1002	843	451	756
13	Cost 'B1' (11+12)	20982	20977	20802	21026
14	Interest on Land value	14313	10002	7307	9374
15	Cost 'B' (13+14)	35295	30979	28109	30400
16	Imputed value of household labour	2589	1562	436	1174
17	Cost 'C' (15+16)	37884	32541	28545	31574

**APPENDIX – 4****Cost of Cultivation Per hectare of Coconut during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	8776	7849	6798	7328
2	Animal labour	-	4	21	13
3	Machine labour	224	117	169	154
4	Seed/seedlings	45	38	16	26
5	Farmyard manure and chemical fertilizers	4853	4130	3043	3572
6	Plant protection	27	41	10	23
7	Land tax and Irrigation cess	56	63	48	69
8	Repair & Maintenance charges	15	20	40	28
9	Interest on working capital	1464	1280	1058	1169
10	Other Expenses	717	616	526	573
11	Total cost 'A' (1-10)	16177	14158	11729	12955
12	Interest on fixed capital	1628	1597	1595	1601
13	Cost 'B1' (11+12)	17805	15755	13324	14556
14	Interest on Land value	168331	168760	136760	150762
15	Cost 'B' (13+14)	186136	184515	150084	165318
16	Imputed value of household labour	2912	1283	539	987
17	Cost 'C' (15+16)	189048	185798	150623	166305

**APPENDIX – 5****Cost of Cultivation per hectare of Tapioca during the year 2000-01 (in Rs.)**

Sl. No	Component of different cost concept	Holding size class			
		Small	Medium	Large	All sizes
1	2	3	4	5	6
1	Hired human labour	20274	13094	15963	15672
2	Animal labour	97	15	-	23
3	Machine labour	334	242	254	264
4	Seed /Seedlings	511	782	504	579
5	Farmyard manure & chemical fertilizers	5087	5530	4894	5166
6	Plant protection	37	40	13	28
7	Land tax and Irrigation cess	85	242	539	346
8	Repair and maintenance charges	118	152	78	115
9	Other expenses	277	730	684	627
10	Interest on Working Capital	2682	2083	2293	2282
11	Total cost 'A' (1-10)	29502	22910	25222	25102
12	Interest on fixed capital	1725	1864	1152	1709
13	Cost 'B1' (11 + 12)	31227	24774	26374	26811
14	Interest on Land value	104162	88982	103527	101244
15	Cost 'B' (13 + 14)	135389	113756	129901	128055
16	Imputed value of household labour	4971	1929	1020	2075
17	Cost 'C' (15 + 16)	140360	115685	130921	130130

**APPENDIX – 6****Cost of Cultivation per hectare of Banana during the year 2000-01 (in Rs.)**

Sl. No	Component of different cost concept	Holding size class			
		Small	Medium	Large	All sizes
1	2	3	4	5	6
1	Hired human labour	25631	26310	26399	26683
2	Animal labour	-	99	-	37
3	Machine labour	572	312	399	357
4	Seed /Seedlings	7448	7825	7055	7437
5	Farmyard manure & chemical fertilizers	24542	21140	25175	33458
6	Plant protection	1027	958	1817	1248
7	Land tax and Irrigation cess	216	405	164	271
8	Repair and maintenance charges	827	512	188	643
9	Interest on Working Capital	6879	7087	7945	8350
10	Other expenses	8527	13317	18253	13369
11	Total cost 'A' (1-10)	75669	77965	87395	91853
12	Interest on fixed capital	1721	1618	2245	1638
13	Cost 'B1' (11 + 12)	77390	79583	89640	93491
14	Interest on Land value	60127	61328	50574	55865
15	Cost 'B' (13 + 14)	137517	140911	140214	149356
16	Imputed value of household labour	11488	5276	4859	7078
17	Cost 'C' (15 + 16)	149005	146187	145073	156434

**APPENDIX – 7****Cost of Cultivation Per hectare of Pepper during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	8708	8301	7157	8185
2	Animal labour	-	-	-	-
3	Machine labour	-	-	-	-
4	Seed/Seedlings	137	27	-	55
5	Farmyard manure and chemical fertilizers	4196	2762	4965	3676
6	Plant protection	74	535	97	298
7	Land tax and Irrigation cess	52	53	105	64
8	Repair & Maintenance charges	147	133	218	182
9	Interest on working capital	1358	1202	1267	1267
10	Other Expenses	268	210	128	211
11	Total cost 'A' (1-10)	14940	13223	13937	13938
12	Interest on fixed capital	1864	2527	2856	2125
13	Cost 'B1' (11+12)	16804	15750	16793	16063
14	Interest on Land value	182738	156584	192484	169575
15	Cost 'B' (13+14)	199542	172334	209277	185638
16	Imputed value of household labour	4682	2473	1156	1662
17	Cost 'C' (15+16)	204224	174807	210433	187300

**APPENDIX – 8****Cost of Cultivation Per hectare of Turmeric during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	11773	17698	23261	14483
2	Animal labour	104	102	176	109
3	Machine labour	142	749	1129	405
4	Seed/Seedlings	4311	7353	9882	5677
5	Farmyard manure and chemical fertilizers	5882	10350	15981	8037
6	Plant protection	349	83	-	57
7	Land tax and Irrigation cess	56	80	111	68
8	Repair & Maintenance charges	62	125	268	79
9	Interest on working capital	2290	3680	5214	2925
10	Other Expenses	334	465	1706	480
11	Total cost 'A' (1-10)	25303	40685	57728	32320
12	Interest on fixed capital	659	1028	1065	737
13	Cost 'B1' (11+12)	25962	41713	58793	33057
14	Interest on Land value	95350	90375	75065	82175
15	Cost 'B' (13+14)	121312	132088	133858	115232
16	Imputed value of household labour	6069	2457	941	4563
17	Cost 'C' (15+16)	127381	134545	134799	119795



**APPENDIX – 9**

**Cost of Cultivation Per hectare of Ginger during the year 2000-01**

Sl No	Components of different Cost Concept	Holding size class			
		Small	Medium	Large	All size
1	Hired Human labour	16666	14571	22976	17260
2	Animal labour	31	-	-	13
3	Machine labour	523	39	-	235
4	Seed/Seedlings	16041	15400	24095	17538
5	Farmyard manure and chemical fertilizers	11264	11874	10691	11363
6	Plant protection	760	348	986	659
7	Land tax and Irrigation cess	150	328	42	158
8	Repair & Maintenance charges	44	126	59	59
9	Interest on working capital	4699	4552	5956	4707
10	Other Expenses	1705	3289	816	2090
11	Total cost 'A' (1-10)	51883	50527	65621	54082
12	Interest on fixed capital	552	923	845	640
13	Cost 'B1' (11+12)	52435	51450	66466	54722
14	Interest on Land value	91322	89381	72033	80068
15	Cost 'B' (13+14)	143757	140831	138499	134790
16	Imputed value of household labour	8317	3796	2073	533
17	Cost 'C' (15+16)	152074	144627	140572	135323